

- 14 -

CLAIMS:

1. A coherent green state composite material comprising a plurality of cores of material selected from the group comprising carbides, nitrides, carbonitrides, cemented carbides, cemented nitrides, cemented carbonitrides and mixtures thereof, dispersed in a matrix, the matrix comprising the components for making an ultra-hard material and a suitable binder.
2. A composite material according to claim 1, wherein the suitable binder is an organic binder.
3. A composite material according to claim 2, wherein the organic binder is selected from the group comprising camphor, methyl cellulose and polyethylene glycol.
4. A composite material according to any one of the preceding claims, wherein the components for making the ultra-hard material comprises a mass of ultra-hard abrasive particles and optionally a second phase comprising a solvent/catalyst or a precursor to a solvent/catalyst, in particulate form, for the ultra-hard abrasive particles.
5. A composite material according to any one of the preceding claims, wherein the ultra-hard material is polycrystalline in nature.
6. A composite material according to claim 5, wherein the polycrystalline ultra-hard material is PCD or PcBN.
7. A composite material according to any one of the preceding claims, wherein the cores are provided as individual particles or in the form of granules.

ART 34 AMDT

AMENDED SHEET

- 15 -

8. A method of producing a coherent green state composite material including the steps of:
 - (i) providing a plurality of cores of material selected from a group comprising carbides, nitrides, carbonitrides, cemented carbides, cemented nitrides, cemented carbonitrides and mixtures thereof;
 - (ii) coating the cores with a source of the components for making an ultra-hard material and a suitable binder; and
 - (iii) consolidating the coated cores to produce a coherent green state composite material in which the cores are dispersed in a matrix formed from the components and the binder.
9. A method according to claim 8, wherein the suitable binder is an organic binder.
10. A method according to claim 9, wherein the organic binder is selected from the group comprising camphor, methyl cellulose and polyethylene glycol.
11. A method according to any one of claims 8 to 10, wherein the components for making the ultra-hard material comprises a mass of ultra-hard abrasive particles and optionally a second phase comprising a solvent/catalyst or a precursor to a solvent/catalyst, in particulate form, for the ultra-hard abrasive particles.
12. A method according to any one of claims 8 to 11, wherein the ultra-hard material is polycrystalline in nature.

ART 34 AMDT

- 16 -

13. A method according to claim 12, wherein the polycrystalline ultra-hard material is PCD or PcBN.
14. A method of producing a tool component including the steps of:
- (i) providing a substrate;
 - (ii) providing a coherent green state composite material as defined in any one of claims 1 to 7;
 - (iii) placing a layer of the coherent green state composite material on a surface of the substrate to produce an unbonded component; and
 - (iv) subjecting the unbonded component to conditions of elevated temperature and pressure suitable to produce an ultra-hard material.
15. A method according to claim 14, wherein the coherent green state composite material in step (ii) or the layer of step (iii) is consolidated to form a consolidated layer before carrying out step (iv).
16. A method according to claim 15, wherein the binder is removed from the consolidated layer before carrying out step (iv).
17. A method of producing a tool component including the steps of:
- (i) providing a substrate;
 - (ii) providing a coherent green state composite material as defined in any one of claims 1 to 7;
 - (iii) placing a layer of the coherent green state composite material on a surface of the substrate;

Art 34 Amd

AMENDED SHEET

- 17 -

- (iv) placing a layer of the components for making an ultra-hard material on the layer of composite material to produce an unbonded component; and
 - (v) subjecting the unbonded component to conditions of elevated temperature and pressure to produce an ultra-hard material from the components.
18. A method according to any one of claims 14 to 17, wherein the cores are provided as granules coated with the components for making the ultra-hard material and the binder.
19. A method according to claim 18, wherein the granules are further coated with a second coating comprising material selected from the group comprising carbides, nitrides, carbonitrides, cemented carbides, cemented nitrides, cemented carbonitrides, and mixtures thereof, or the components for making an ultra-hard material of a different grade to that of the first coating.

ART. 34 AMDT

AMENDED SHEET